



DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648-XA829]

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Washington State Department of Transportation Purdy Bridge Rehabilitation Project, Pierce County, WA

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; issuance of an incidental harassment authorization.

SUMMARY: In accordance with the regulations implementing the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that NMFS has issued an incidental harassment authorization (IHA) to the Washington State Department of Transportation (WADOT) to incidentally harass, by Level B harassment only, marine mammals during construction activities associated with a Purdy Bridge Rehabilitation Project in Pierce County, WA.

DATES: This Authorization is effective from July 16, 2021 through February 15, 2022.

FOR FURTHER INFORMATION CONTACT: Dwayne Meadows, Ph.D., Office of Protected Resources, NMFS, (301) 427-8401. Electronic copies of the application and supporting documents, as well as a list of the references cited in this document, may be obtained online at: <https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act>. In case of problems accessing these documents, please call the contact listed above.

SUPPLEMENTARY INFORMATION:

Background

The MMPA prohibits the “take” of marine mammals, with certain exceptions. Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq.*) direct the Secretary of Commerce (as delegated to NMFS) to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are issued or, if the taking is limited to harassment, a notice of a proposed incidental take authorization may be provided to the public for review.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for taking for subsistence uses (where relevant). Further, NMFS must prescribe the permissible methods of taking and other “means of effecting the least practicable adverse impact” on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stocks for taking for certain subsistence uses (referred to in shorthand as “mitigation”); and requirements pertaining to the mitigation, monitoring and reporting of the takings are set forth.

The definitions of all applicable MMPA statutory terms cited above are included in the relevant sections below.

Summary of Request

On July 27, 2020, NMFS received an application from WADOT requesting an IHA to take small numbers of six species of marine mammals incidental to pile driving and removal associated with the Purdy Bridge Rehabilitation Project. The application was deemed adequate and complete on December 1, 2020. WADOT’s request is for take of a small number of each species by Level B harassment. Neither WADOT nor NMFS

expects serious injury or mortality to result from this activity and, therefore, an IHA is appropriate.

Description of Specified Activity

Overview

The purpose of the project is to rehabilitate the 2 in-water support piers of the State Route 302 Purdy Bridge by removing the top 3 inches (7.5 centimeter (cm)) of decaying concrete on each support pier and replacing with fiberglass reinforced concrete. Twenty steel H piles and 44 sheetpiles will be driven to create a caisson-like dewatered structures around the bridge piers to allow the work to be completed. Once the work on the piers is completed the piles will be removed. A needle gun will be used to remove 3 inches (7.5 cm) of decayed concrete from the two in-water bridge piers. Pile driving/removal and concrete removal is expected to take no more than 20 days. Pile driving/removal would be by vibratory pile driving. A detailed description of the planned project is provided in the **Federal Register** notice for the proposed IHA (85 FR 81886; December 17, 2020). Since that time, no changes have been made to the planned activities. Therefore, a detailed description is not provided here. Please refer to that **Federal Register** notice for the description of the specific activity.

Comments and Response

A notice of NMFS's proposal to issue an IHA to WADOT was published in the **Federal Register** on December 17, 2020 (85 FR 81886). That notice described, in detail, WADOT's activity, the marine mammal species that may be affected by the activity, and the anticipated effects on marine mammals. During the 30-day public comment period, NMFS received no public comment or comment letter from the Marine Mammal Commission.

Description of Marine Mammals in the Area of Specified Activities

Sections 3 and 4 of the application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history, of the potentially affected species. Additional information regarding population trends and threats may be found in NMFS's Stock Assessment Reports (SARs; <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments>) and more general information about these species (*e.g.*, physical and behavioral descriptions) may be found on NMFS's website (<https://www.fisheries.noaa.gov/find-species>).

Table 1 lists all species with expected potential for occurrence in the project area and summarizes information related to the population or stock, including regulatory status under the MMPA and Endangered Species Act (ESA) and potential biological removal (PBR), where known. For taxonomy, we follow Committee on Taxonomy (2020). PBR is defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (as described in NMFS's SARs). While no mortality is anticipated or authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS's stock abundance estimates for most species represent the total estimate of individuals within the geographic area, if known, that comprises that stock. For some species, this geographic area may extend beyond U.S. waters. All managed stocks in this region are assessed in NMFS's U.S. Pacific or Alaska SARs (*e.g.*, Caretta *et al.*, 2020; Muto *et al.*, 2020).

Table 1. Species That Spatially Co-occur with the Activity to the Degree That Take Is Reasonably Likely to Occur

Common name	Scientific name	Stock	ESA/MMPA status; Strategic (Y/N) ¹	Stock abundance (CV, N _{min} , most recent abundance survey) ²	PBR	Annual M/SI ³
Order Cetartiodactyla – Cetacea – Superfamily Mysticeti (baleen whales)						
Family Eschrichtiidae						
Gray Whale	<i>Eschrichtius robustus</i>	Eastern North Pacific	-, -, N	26,960 (0.05, 25,849, 2016)	801	138
Order Cetartiodactyla – Cetacea – Superfamily Odontoceti (toothed whales, dolphins, and porpoises)						
Family Delphinidae						
Short-beaked Common Dolphin	<i>Delphinus delphis</i>	California/Oregon/Washington	-, -, N	969,861 (0.17, 839,325, 2014)	8393	>40
Family Phocoenidae (porpoises)						
Harbor porpoise	<i>Phocoena phocoena</i>	Washington Inland Waters	-, -, N	11,233 (0.37, 8,308, 2015)	66	≥7.2
Order Carnivora – Superfamily Pinnipedia						
Family Otariidae (eared seals and sea lions)						
California Sea Lion	<i>Zalophus californianus</i>	United States	-, -, N	257,606 (N/A, 233,515, 2014)	14,011	>321
Steller Sea Lion	<i>Eumetopias jubatus</i>	Eastern DPS	-, -, N	43,201 a (see SAR, 43,201, 2017)	2592	112
Family Phocidae (earless seals)						
Harbor Seal	<i>Phoca vitulina</i>	Southern Puget Sound	-, -, N	UNK (UNK, UNK, 1999)	UND	3.4

1 - Endangered Species Act (ESA) status: Endangered (E), Threatened (T)/MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.

2- NMFS marine mammal stock assessment reports online at: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments>. CV is coefficient of variation; Nmin is the minimum estimate of stock abundance. UNK –Unknown, UND – Undetermined.

3 - These values, found in NMFS's SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (e.g., commercial fisheries, ship strike). Annual Mortality/Serious Injury (M/SI) often cannot be determined precisely and is in some cases presented as a minimum value or range. A CV associated with estimated mortality due to commercial fisheries is presented in some cases.

Harbor seal, California sea lion, and Harbor porpoise spatially co-occur with the activity to the degree that take is reasonably likely to occur, and we have authorized it.

For gray whale, Steller sea lion, and short-beaked common dolphin, occurrence is such that take is possible, and we have authorized it.

Transient killer whales (*Orcinus orca*) spatially co-occur with the activity to the degree that take is possible, while Southern Resident killer whales and humpback whales (*Megaptera novaeangliae*) are very rare visitors to the area. Work will be shutdown if any of these species approach the Level B harassment zone, so take is not requested for these species and they are not further discussed. A detailed description of the species likely to be affected by the project, including brief introductions to the species and relevant stocks as well as available information regarding population trends and threats, and information regarding local occurrence, were provided in the **Federal Register** notice for the proposed IHA (85 FR 81886; December 17, 2020); since that time, we are not aware of any changes in the status of these species and stocks; therefore, detailed descriptions are not provided here. Please refer to that **Federal Register** notice for these descriptions. Please also refer to NMFS' website (<https://www.fisheries.noaa.gov/find-species>) for generalized species accounts.

Potential Effects of Specified Activities on Marine Mammals and their Habitat

The effects of underwater noise from WADOT's construction activities have the potential to result in behavioral harassment of marine mammals in the vicinity of the survey area. The notice of proposed IHA (85 FR 81886; December 17, 2020) included a discussion of the effects of anthropogenic noise on marine mammals and the potential effects of underwater noise from the WADOT's construction activities on marine mammals and their habitat. That information and analysis is incorporated by reference into this final IHA determination and is not repeated here; please refer to the notice of proposed IHA (85 FR 81886; December 17, 2020).

Estimated Take

This section provides an estimate of the number of incidental takes authorized through this IHA, which will inform both NMFS' consideration of "small numbers" and the negligible impact determination.

Harassment is the only type of take expected to result from these activities. Except with respect to certain activities not pertinent here, section 3(18) of the MMPA defines "harassment" as any act of pursuit, torment, or annoyance, which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

Authorized takes would be by Level B harassment, as use of the acoustic source (*i.e.*, vibratory pile driving/removal and needle gun) has the potential to result in disruption of behavioral patterns for individual marine mammals. Based on the nature of the activity and the anticipated effectiveness of the mitigation measures (*i.e.*, shutdown) – discussed in detail below in Mitigation section, Level A harassment is not authorized.

As described previously, no mortality is authorized for this activity. Below we describe how the take is estimated.

Generally speaking, we estimate take by considering: (1) acoustic thresholds above which NMFS believes the best available science indicates marine mammals will be behaviorally harassed or incur some degree of permanent hearing impairment; (2) the area or volume of water that will be ensonified above these levels in a day; (3) the density or occurrence of marine mammals within these ensonified areas; and, (4) the number of days of activities. We note that while these basic factors can contribute to a basic calculation to provide an initial prediction of takes, additional information that can qualitatively inform take estimates is also sometimes available (*e.g.*, previous monitoring

results or average group size). Below, we describe the factors considered here in more detail and present the take estimate.

The effect of needle guns is unclear as we have not recently authorized take by this method in these circumstances. Given the relatively low source level for needle guns and small ensonified areas discussed below, there is some uncertainty about whether take will occur from this activity. However, in consideration of the applicant's request and the predicted source levels, we conservatively authorize some take for this project.

Acoustic Thresholds

NMFS recommends the use of acoustic thresholds that identify the received level of underwater sound above which exposed marine mammals would be reasonably expected to be behaviorally harassed (equated to Level B harassment) or to incur Permanent Threshold Shift (PTS) of some degree (equated to Level A harassment). Thresholds have also been developed identifying the received level of in-air sound above which exposed pinnipeds would likely be behaviorally harassed.

Level B Harassment for non-explosive sources – Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to varying degrees by other factors related to the source (*e.g.*, frequency, predictability, duty cycle), the environment (*e.g.*, bathymetry), and the receiving animals (hearing, motivation, experience, demography, behavioral context) and can be difficult to predict (Southall *et al.*, 2007, Ellison *et al.*, 2012). Based on what the available science indicates and the practical need to use a threshold based on a factor that is both predictable and measurable for most activities, NMFS uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS predicts that marine mammals are likely to be behaviorally harassed in a manner we consider Level B harassment when exposed to underwater anthropogenic noise above received levels of 120 decibel (dB) re 1 microPascal (μ Pa) (root mean square (rms)) for

continuous (*e.g.*, vibratory pile-driving) and above 160 dB re 1 μ Pa (rms) for non-explosive impulsive (*e.g.*, impact pile driving) or intermittent (*e.g.*, scientific sonar) sources. For in-air sounds, NMFS predicts that harbor seals exposed above received levels of 90 dB re 20 μ Pa (rms) will be behaviorally harassed, and other pinnipeds will be harassed when exposed above 100 dB re 20 μ Pa (rms).

WADOT's proposed activity includes the use of continuous (vibratory pile-driving and removal in water and needle guns in air) sources, and therefore the 120 dB re 1 μ Pa (rms) threshold is applicable in water and the pinniped thresholds are applicable in air.

Level A harassment for non-explosive sources - NMFS' Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0) (Technical Guidance, 2018) identifies dual criteria to assess auditory injury (Level A harassment) to five different marine mammal groups (based on hearing sensitivity) as a result of exposure to noise from two different types of sources (impulsive or non-impulsive). WADOT's activity includes the use of non-impulsive (vibratory pile driving/removal) sources.

These thresholds are provided in Table 2. The references, analysis, and methodology used in the development of the thresholds are described in NMFS 2018 Technical Guidance, which may be accessed at

<https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance>.

Table 2. Thresholds Identifying the Onset of Permanent Threshold Shift

	PTS Onset Acoustic Thresholds (Received Level)
Hearing Group	Non-impulsive
Low-Frequency (LF) Cetaceans	<i>Cell 2</i> $L_{E,LF,24h}$: 199 dB

Mid-Frequency (MF) Cetaceans	<i>Cell 4</i> $L_{E, MF, 24h}$: 198 dB
High-Frequency (HF) Cetaceans	<i>Cell 6</i> $L_{E, HF, 24h}$: 173 dB
Phocid Pinnipeds (PW) (Underwater)	<i>Cell 8</i> $L_{E, PW, 24h}$: 201 dB
Otariid Pinnipeds (OW) (Underwater)	<i>Cell 10</i> $L_{E, OW, 24h}$: 219 dB
Note: Cumulative sound exposure level (L_E) has a reference value of $1\mu Pa^2s$. In this Table, thresholds are abbreviated to reflect American National Standards Institute standards (ANSI 2013). The subscript associated with cumulative sound exposure level thresholds indicates the designated marine mammal auditory weighting function (LF, MF, and HF cetaceans, and PW and OW pinnipeds) and that the recommended accumulation period is 24 hours. The cumulative sound exposure level thresholds could be exceeded in a multitude of ways (<i>i.e.</i> , varying exposure levels and durations, duty cycle). When possible, it is valuable for action proponents to indicate the conditions under which these acoustic thresholds will be exceeded.	

Ensonified Area

Here, we describe operational and environmental parameters of the activity that will feed into identifying the area ensonified above the acoustic thresholds, which include source levels and transmission loss coefficient.

The sound field in the project area is the existing background noise plus additional construction noise from the proposed project. Marine mammals are expected to be affected via sound generated by the primary components of the project (*i.e.*, vibratory pile driving and removal and needle guns).

Vibratory hammers produce constant sound when operating, and produce vibrations that liquefy the sediment surrounding the pile, allowing it to penetrate to the required seating depth. The actual durations of each installation method vary depending on the type and size of the pile.

In order to calculate distances to the Level A harassment and Level B harassment sound thresholds for activities being used in this project, NMFS used acoustic monitoring data from other locations to develop source levels for the various pile types, sizes and methods (see Table 3). Source levels for the 48-inch sheetpiles come from the

Caltrans compendium (2015) measurements of 24-inch steel sheetpiles supported by acoustic data from another project in Seattle, Washington that used 48-inch steel sheetpiles (Greenbusch Group, 2015), while the source data for H piles comes from the Caltrans (2015) compendium. Needle guns can produce sounds up to 112 dbA (OSHA, 2020) and we use that as the source level for that activity.

Table 3. Project Sound Source Levels

Method	Pile Type	Estimated Noise Level	Source
Vibratory Driving/ Removal	48-inch sheet	165 dB _{RMS}	CALTRANS 2015, Greenbusch Group 2015
Vibratory Driving/ Removal	12-inch H pile	150 dB _{RMS}	CALTRANS 2015

Note: SEL = single strike sound exposure level; dB peak = peak sound level; rms = root mean square.

Level B Harassment Zones

Transmission loss (TL) is the decrease in acoustic intensity as an acoustic pressure wave propagates out from a source. TL parameters vary with frequency, temperature, sea conditions, current, source and receiver depth, water depth, water chemistry, and bottom composition and topography. The general formula for underwater TL is:

$$TL = B * \text{Log}_{10} (R1/R2), \text{ where}$$

TL = transmission loss in dB

B = transmission loss coefficient; for practical spreading equals 15

R1 = the distance of the modeled SPL from the driven pile, and

R2 = the distance from the driven pile of the initial measurement

The recommended TL coefficient for most nearshore environments is the practical spreading value of 15. This value results in an expected propagation environment that would lie between spherical and cylindrical spreading loss conditions, which is the most appropriate assumption for WADOT's proposed activity in the absence of specific modelling.

Using the equation above, underwater noise is predicted to fall below the behavioral effects threshold of 120 dB rms for marine mammals at distances of 1,000 or 10,000 m depending on the pile type(s) and methods (Table 4). It should be noted that based on the geography of Henderson Bay, sound will not reach the full distance of the Level B harassment isopleths in most directions. In-air needle gun noise is predicted to reach the phocid (harbor seal) threshold (90 dB) at 192 meters (629 feet), and the otariid threshold (100 dB) at 60 meters (200 feet).

Table 4. Level A and Level B Harassment Isopleths (m) for Each Pile Type and Hearing Group

Pile Type	Level A Harassment					Level B Harassment
	Low Frequency	Mid Frequency	High Frequency	Otariid	Phocid	
Sheet	31.8	2.8	47	19.3	1.4	10,000
H pile	3.2	0.3	4.7	1.9	0.1	1,000

Level A Harassment Zones

When the NMFS Technical Guidance (2016) was published, in recognition of the fact that ensonified area/volume could be more technically challenging to predict because of the duration component in the new thresholds, we developed a User Spreadsheet that includes tools to help predict a simple isopleth that can be used in conjunction with marine mammal density or occurrence to help predict takes. We note that because of some of the assumptions included in the methods used for these tools, we anticipate that isopleths produced are typically going to be overestimates of some degree, which may result in some degree of overestimate of take by Level A harassment. However, these tools offer the best way to predict appropriate isopleths when more sophisticated 3D modeling methods are not available, and NMFS continues to develop ways to quantitatively refine these tools, and will qualitatively address the output where appropriate. For stationary sources such as vibratory pile driving or removal using any of

the methods discussed above, NMFS User Spreadsheet predicts the closest distance at which, if a marine mammal remained at that distance the whole duration of the activity, it would not incur PTS. Inputs used in the User Spreadsheet are reported in Table 5 and the resulting isopleths are reported in Table 4 for each of the work scenarios. Note that while the inputs for driving and removal of each type of pile are different, the resulting isopleths are the same because the total time per day (number of piles per day times minutes per pile) of pile driving is identical. Therefore Table 4 includes only a single row for each pile type. The above input scenarios lead to PTS isopleth distances (Level A thresholds) of less than 1 m to 47 m.

The Level A harassment zones identified in Table 4 are based upon an animal exposed to pile driving multiple piles per day. Considering duration of driving or removing each pile (up to 30 minutes) and breaks between pile installations (to reset equipment and move pile into place), this means an animal would have to remain within the small area estimated to be ensonified above the Level A harassment threshold for multiple hours. This is highly unlikely given marine mammal movement throughout the area.

Table 5. NMFS Technical Guidance User Spreadsheet Input to Calculate Level A Isopleths for a Combination of Pile Driving

Method	Pile Type	Source Level	Minutes per pile	Piles per Day
Vibratory Driving	Sheet	165 db RMS	30	8
Vibratory Driving	H pile	150 db RMS	30	8
Vibratory Removal	Sheet	165 db RMS	15	16
Vibratory Removal	H pile	150 db RMS	15	16

Note: Transmission Loss for all methods is 15 LogR and the weighting factor adjustment is 2.5.

Marine Mammal Occurrence and Take Calculation and Estimation

In this section we provide the information about the presence, density, or group dynamics of marine mammals that will inform the take calculations. The main source of

density information for the area is the U.S. Navy's database used to establish baseline density estimates for their construction and testing and training activities in Puget Sound (U.S. Navy, 2019). The Navy database includes seasonal estimates of abundance where available and appropriate. Where such estimates existed, we used the larger density estimate for the fall or summer seasons, when this project is scheduled to occur. These density estimates are shown in Table 6. No density estimates exist for the rarer short-beaked common dolphin so we used more qualitative data on observations from The Whale Museum's sightings database and project specific report to WADOT (TWM, 2020).

Table 6. Density of Marine Mammals Used to Calculate Expected Take

Species	Density #/ km ²
Harbor seal	3.91
California sea lion	0.2211
Steller sea lion	0.0478
Gray whale	0.000086
Short-beaked common dolphin	*
Harbor porpoise	0.86

* See text, no density estimate exists for short-beaked common dolphins

Here we describe how the information provided above is brought together to produce a quantitative take estimate. Given the geography of the project area, the area ensonified when driving or removing H piles is 1.36 square kilometers (km²)(0.53 square miles (mi²)), the area ensonified when driving or removing sheetpiles is 17.9 km² (6.9 mi²), and the area ensonified when using the needle gun is 0.06 km² (0.023 mi²) for phocids and 0.01 km² (0.004 mi²) for otariids. As noted above, there will be a total of 5 days driving or removing H piles, 9 days driving or removing sheetpiles, and 6 days of using the needle gun. For species with density estimates, the estimated take is calculated as the sum of the density times the area and days for each pile type/activity with the results for each activity added to give a total estimated take. Additional qualitative factors

may be considered for species with small estimated take calculations (see below). Take by Level B harassment is authorized and summarized in Table 7.

Gray Whale

The Navy Marine Species Density Database (U.S. Navy 2019) estimates the density of gray whales in the Henderson Bay area as 0.000086/km². Based on this density estimate, the following number of gray whales may be present in the Level B harassment zones:

H piles: $0.000086/\text{km}^2 * 1.36 \text{ km}^2 * 5 \text{ days} = 0.0005848$

Sheetpiles: $0.000086/\text{km}^2 * 17.9 \text{ km}^2 * 9 \text{ days} = 0.0138546$

Total Estimated Take = 0.014 animals

The total represents less than one gray whale. In the event an individual enters the area and remains for some time and is harassed on multiple days, we are authorizing Level B harassment of 10 gray whales. Because the Level A harassment zones are relatively small and we believe the PSO will be able to effectively monitor the Level A harassment zones, we do not authorize take by Level A harassment of gray whales.

Short-beaked Common Dolphin

As mentioned above, the Navy Marine Species Density Database (U.S. Navy 2019) does not provide an estimate of density of short-beaked common dolphins in the Henderson Bay area. The Whale Museum data indicate that common dolphins have been documented in waters adjacent to the project (TWM, 2020). Nearly all sightings were in 2016 and 2017 pointing out the variability and uncertainty of their presence. Short-beaked common dolphins often occur in groups; for the Puget Sound data groups consisted of no more than five individuals (Orca Network. 2020). Due to the low likelihood of occurrence an expectation of one group of five animals in the large level B harassment zone for sheetpiles per day is a reasonable representation of occurrence. With 9 days of sheetpiling maximum this equates to 45 level B takes. Because of the smaller

size of the Level B harassment zones for the H piles, we expect that one group of five animals over the course of the 5 work days with H piles is a reasonable representation of occurrence. We are thus authorizing Level B harassment of 50 short-beaked common dolphins. Because the Level A harassment zones are relatively small and we believe the PSO will be able to effectively monitor the Level A harassment zones, we do not authorize take by Level A harassment of short-beaked common dolphins.

Harbor Porpoise

The Navy Marine Species Density Database (U.S. Navy 2019) estimates the density of harbor porpoise in the Henderson Bay area as 0.86/km². Based on this density estimate, the following number of harbor porpoises may be present in the Level B harassment zones:

$$\text{H piles: } 0.86/\text{km}^2 * 1.36 \text{ km}^2 * 5 \text{ days} = 5.848$$

$$\text{Sheetpiles: } 0.86/\text{km}^2 * 17.9 \text{ km}^2 * 9 \text{ days} = 138.546$$

$$\text{Total Estimated Take} = 144.4 \text{ animals}$$

We are authorizing Level B harassment of 145 harbor porpoises. Because the Level A harassment zones are relatively small and we believe the PSO will be able to effectively monitor the Level A harassment zones, we do not authorize take by Level A harassment of harbor porpoises.

California Sea Lion

The Navy Marine Species Density Database (U.S. Navy 2019) estimates the density of California sea lions in the Henderson Bay area as 0.2211/km². Based on this density estimate, the following number of California sea lions may be present in the Level B harassment zones:

$$\text{H piles: } 0.2211/\text{km}^2 * 1.36 \text{ km}^2 * 5 \text{ days} = 1.503$$

$$\text{Sheetpiles: } 0.2211/\text{km}^2 * 17.9 \text{ km}^2 * 9 \text{ days} = 35.619$$

$$\text{Needle gun: } 0.2211/\text{km}^2 * 0.01 \text{ km}^2 * 6 \text{ days} = 0.013$$

Total Estimated Take = 37.14 animals

We are authorizing Level B harassment of 38 California sea lions. Because the Level A harassment zones are relatively small and we believe the PSO will be able to effectively monitor the Level A harassment zones, we do not authorize take by Level A harassment of California sea lions.

Steller Sea Lion

The Navy Marine Species Density Database (U.S. Navy 2019) estimates the density of Steller sea lions in the Henderson Bay area as 0.0478/km². Based on this density estimate, the following number of Steller sea lions may be present in the Level B harassment zones:

H piles: $0.0478/\text{km}^2 * 1.36 \text{ km}^2 * 5 \text{ days} = 0.325$

Sheetpiles: $0.0478/\text{km}^2 * 17.9 \text{ km}^2 * 9 \text{ days} = 7.70$

Needle gun: $0.0478/\text{km}^2 * 0.01 \text{ km}^2 * 6 \text{ days} = 0.007$

Total Estimated Take = 8.03 animals

We are authorizing for Level B harassment of nine Steller sea lions. Because the Level A harassment zones are relatively small and we believe the PSO will be able to effectively monitor the Level A harassment zones, we do not authorize take by Level A harassment of Steller sea lions.

Harbor Seal

The Navy Marine Species Density Database (U.S. Navy 2019) estimates the density of harbor seal in the Henderson Bay area as 3.91/km². Based on this density estimate, the following number of harbor seals may be present in the Level B harassment zones:

H piles: $3.91/\text{km}^2 * 1.36 \text{ km}^2 * 5 \text{ days} = 26.588$

Sheetpiles: $3.91/\text{km}^2 * 17.9 \text{ km}^2 * 9 \text{ days} = 629.901$

Needle gun: $3.91/\text{km}^2 * 0.06 \text{ km}^2 * 6 \text{ days} = 1.408$

Total Estimated Take = 657.9 animals

We are authorizing for Level B harassment of 658 harbor seals. Because the Level A harassment zones are relatively small and we believe the PSO will be able to effectively monitor the Level A harassment zones, we do not authorize take by Level A harassment of Steller sea lions.

Table 7. Authorized Amount of Taking, by Level A Harassment and Level B Harassment, by Species and Stock and Percent of Take by Stock

Species	Take Request	Percent of Stock
Harbor seal	658	*
California sea lion	38	< 0.1
Steller sea lion	9	< 0.1
Gray whale	10	0.4
Short-beaked common dolphin	50	< 0.1
Harbor porpoise	145	1.3

* There is no official estimate of stock size for this stock

Mitigation

In order to issue an IHA under section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to the activity, and other means of effecting the least practicable impact on the species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stock for taking for certain subsistence uses (latter not applicable for this action). NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting the activity or other means of effecting the least practicable adverse impact upon the affected species or stocks and their habitat (50 CFR 216.104(a)(11)).

In evaluating how mitigation may or may not be appropriate to ensure the least practicable adverse impact on species or stocks and their habitat, as well as subsistence uses where applicable, we carefully consider two primary factors:

(1) The manner in which, and the degree to which, the successful implementation of the measure(s) is expected to reduce impacts to marine mammals, marine mammal species or stocks, and their habitat. This considers the nature of the potential adverse impact being mitigated (likelihood, scope, range). It further considers the likelihood that the measure will be effective if implemented (probability of accomplishing the mitigating result if implemented as planned), the likelihood of effective implementation (probability implemented as planned); and

(2) The practicability of the measures for applicant implementation, which may consider such things as cost, impact on operations, and, in the case of a military readiness activity, personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity.

The following mitigation measures are in the IHA:

- For in-water heavy machinery work other than pile driving/removal (*e.g.*, standard barges, *etc.*), and for needle gun work, if a marine mammal comes within 10 m, operations shall cease and vessels shall reduce speed to the minimum level required to maintain steerage and safe working conditions. This type of work could include the following activities: (1) Movement of the barge to or around the pile location; or (2) positioning of the pile on the substrate via a crane (*i.e.*, stabbing the pile);
- Conduct briefings between construction supervisors and crews and the marine mammal monitoring team prior to the start of all pile driving/removal activity and when new personnel join the work, to explain responsibilities, communication procedures, marine mammal monitoring protocol, and operational procedures;

- For those marine mammals for which Level B harassment take has not been requested, in-water pile installation/removal will shut down immediately if such species are observed within or entering the Level B harassment zone; and

- If take reaches the authorized limit for an authorized species, pile installation/removal will be stopped as these species approach the Level B harassment zone to avoid additional take.

The following mitigation measures would apply to WADOT's in-water construction activities.

- *Establishment of Shutdown Zones*- WADOT will establish shutdown zones for all pile driving and removal activities (Table 8). The purpose of a shutdown zone is generally to define an area within which shutdown of the activity would occur upon sighting of a marine mammal (or in anticipation of an animal entering the defined area). Shutdown zones typically vary based on the activity type and marine mammal hearing group (Table 2). Because the zones are small in this project, and WADOT seeks to simplify their monitoring, they have requested to establish shutdown zones of the same size that apply separately to cetaceans and pinnipeds, rather than having multiple size zones within each of these marine mammal groups corresponding to each hearing group. Therefore the shutdown zones are based on the largest Level A harassment zone within the cetacean and pinniped groups, respectively, with an absolute minimum shutdown zone size of 10 m (33 ft).

- *Pile wake-up*- When removing piles WADOT will shake the pile slightly prior to removal to break the bond with surrounding sediment to avoid pulling out large blocks of sediment. Piles they will also be removed slowly to minimize turbidity.

- The placement of Protected Species Observers (PSOs) during all pile driving and removal activities (described in detail in the **Monitoring and Reporting** section) will ensure that the entire shutdown zone is visible during pile installation.

Should environmental conditions deteriorate such that marine mammals within the entire shutdown zone would not be visible (*e.g.*, fog, heavy rain), pile driving and removal must be delayed until the PSO is confident marine mammals within the shutdown zone could be detected.

- *Monitoring for Level B Harassment-* WADOT will monitor the Level A and B harassment and shutdown zones. Monitoring zones provide utility for observing by establishing monitoring protocols for areas adjacent to the shutdown zones. Monitoring zones enable observers to be aware of and communicate the presence of marine mammals in the project area outside the shutdown zone and thus prepare for a potential halt of activity should the animal enter the shutdown zone. Placement of PSOs will allow PSOs to observe marine mammals within the Level B harassment zones that serve as monitoring zones.

- *Pre-activity Monitoring-* Prior to the start of daily in-water construction activity, or whenever a break in pile driving/removal of 30 minutes or longer occurs, PSOs will observe the shutdown and monitoring zones for a period of 30 minutes. The shutdown zone will be considered cleared when a marine mammal has not been observed within the zone for that 30-minute period. If a marine mammal is observed within the shutdown zone, a soft-start cannot proceed until the animal has left the zone or has not been observed for 15 minutes. When a marine mammal for which Level B harassment take is authorized is present in the Level B harassment zone, activities may begin and Level B harassment take will be recorded. If the entire Level B harassment zone is not visible at the start of construction, pile driving activities can begin. If work ceases for more than 30 minutes, the pre-activity monitoring of the shutdown zones will commence.

- Pile driving or removal must occur during daylight hours.

Based on our evaluation of the applicant's measures, as well as other measures considered by NMFS, NMFS has determined that the mitigation measures provide the

means effecting the least practicable impact on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

Table 8. Shutdown Zones (radius in meters) By Pile Type, Activity and Hearing Group

Pile Type	Low Frequency	Mid Frequency	High Frequency	Otariid	Phocid
Sheet	50	50	50	20	20
H pile	10	10	10	10	10

Monitoring and Reporting

In order to issue an IHA for an activity, section 101(a)(5)(D) of the MMPA states that NMFS must set forth requirements pertaining to the monitoring and reporting of such taking. The MMPA implementing regulations at 50 CFR 216.104 (a)(13) indicate that requests for authorizations must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present in the proposed action area. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

Monitoring and reporting requirements prescribed by NMFS should contribute to improved understanding of one or more of the following:

- Occurrence of marine mammal species or stocks in the area in which take is anticipated (*e.g.*, presence, abundance, distribution, density);
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of: (1) action or environment (*e.g.*, source characterization, propagation, ambient noise); (2) affected species (*e.g.*, life history, dive patterns); (3) co-occurrence of

marine mammal species with the action; or (4) biological or behavioral context of exposure (*e.g.*, age, calving or feeding areas);

- Individual marine mammal responses (behavioral or physiological) to acoustic stressors (acute, chronic, or cumulative), other stressors, or cumulative impacts from multiple stressors;
- How anticipated responses to stressors impact either: (1) long-term fitness and survival of individual marine mammals; or (2) populations, species, or stocks;
- Effects on marine mammal habitat (*e.g.*, marine mammal prey species, acoustic habitat, or other important physical components of marine mammal habitat); and
- Mitigation and monitoring effectiveness.

Visual Monitoring

Marine mammal monitoring must be conducted in accordance with the Monitoring Plan and section 5 of the IHA. Marine mammal monitoring during pile driving and removal must be conducted by NMFS-approved PSOs in a manner consistent with the following:

- Independent PSOs (*i.e.*, not construction personnel) who have no other assigned tasks during monitoring periods must be used;
- Other PSOs may substitute education (degree in biological science or related field) or training for experience; and
- WADOT must submit PSO Curriculum Vitae for approval by NMFS prior to the onset of pile driving.

PSOs must have the following additional qualifications:

- Ability to conduct field observations and collect data according to assigned protocols;
- Experience or training in the field identification of marine mammals, including the identification of behaviors;

- Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations;
- Writing skills sufficient to prepare a report of observations including but not limited to the number and species of marine mammals observed; dates and times when in-water construction activities were conducted; dates, times, and reason for implementation of mitigation (or why mitigation was not implemented when required); and marine mammal behavior; and
- Ability to communicate orally, by radio or in person, with project personnel to provide real-time information on marine mammals observed in the area as necessary.

Up to four PSOs will be employed. PSO locations will provide an unobstructed view of all water within the shutdown zone, and as much of the Level A and Level B harassment zones as possible. PSO locations are as follows:

- (1) At the pile driving/removal site or best vantage point practicable to monitor the shutdown zones and the small area north into Burley Lagoon;
- (2) At Purdy Spit Park to monitor the Level B harassment zone near the project site in Henderson Bay; and
- (3) For the smaller Level B harassment zone associated with H pile driving/removal, an additional PSOs will be located on the southeast end of the level B harassment zone (see Monitoring Plan Figure 4);
- (4) For the larger Level B harassment zone associated with sheetpile driving/removal PSOs will be at the pile/driving removal site and Purdy Spit park as described above. Two additional PSOs will be located further south in Henderson Bay (see Monitoring Plan Figure 2): one at Kopachuck State Park to monitor the southern end of the Level B harassment zone and one further south at Penrose Point State Park to

monitor the approaches into Henderson Bay, especially for killer and humpback whales and other large whales not authorized for take.

Monitoring will be conducted 30 minutes before, during, and 30 minutes after pile driving/removal activities. In addition, observers shall record all incidents of marine mammal occurrence, regardless of distance from activity, and shall document any behavioral reactions in concert with distance from piles being driven or removed. Pile driving activities include the time to install or remove a single pile or series of piles, as long as the time elapsed between uses of the pile driving or drilling equipment is no more than 30 minutes.

Reporting

A draft marine mammal monitoring report will be submitted to NMFS within 90 days after the completion of pile driving and removal activities, or 60 days prior to a requested date of issuance of any future IHAs for projects at the same location, whichever comes first. The report will include an overall description of work completed, a narrative regarding marine mammal sightings, and associated PSO data sheets.

Specifically, the report must include:

- Dates and times (begin and end) of all marine mammal monitoring;
- Construction activities occurring during each daily observation period, including how many and what type of piles were driven or removed and by what method (*i.e.*, impact or vibratory and if other removal methods were used);
- Weather parameters and water conditions during each monitoring period (*e.g.*, wind speed, percent cover, visibility, sea state);
- The number of marine mammals observed, by species, relative to the pile location and if pile driving or removal was occurring at time of sighting;
- Age and sex class, if possible, of all marine mammals observed;
- PSO locations during marine mammal monitoring;

- Distances and bearings of each marine mammal observed to the pile being driven or removed for each sighting (if pile driving or removal was occurring at time of sighting);
- Description of any marine mammal behavior patterns during observation, including direction of travel and estimated time spent within the Level A and Level B harassment zones while the source was active;
- Number of individuals of each species (differentiated by month as appropriate) detected within the monitoring zone, and estimates of number of marine mammals taken, by species (a correction factor may be applied to total take numbers, as appropriate);
- Detailed information about any implementation of any mitigation triggered (*e.g.*, shutdowns and delays), a description of specific actions that ensued, and resulting behavior of the animal, if any; and
- Description of attempts to distinguish between the number of individual animals taken and the number of incidences of take, such as ability to track groups or individuals.

If no comments are received from NMFS within 30 days, the draft final report will constitute the final report. If comments are received, a final report addressing NMFS comments must be submitted within 30 days after receipt of comments.

Reporting Injured or Dead Marine Mammals

In the event that personnel involved in the construction activities discover an injured or dead marine mammal, WADOT shall report the incident to the Office of Protected Resources (OPR), NMFS and to the regional stranding coordinator as soon as feasible. If the death or injury was clearly caused by the specified activity, WADOT must immediately cease the specified activities until NMFS is able to review the circumstances of the incident and determine what, if any, additional measures are appropriate to ensure

compliance with the terms of the IHA. The IHA-holder must not resume their activities until notified by NMFS. The report must include the following information:

- Time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable);
- Species identification (if known) or description of the animal(s) involved;
- Condition of the animal(s) (including carcass condition if the animal is dead);
- Observed behaviors of the animal(s), if alive;
- If available, photographs or video footage of the animal(s); and
- General circumstances under which the animal was discovered.

Negligible Impact Analysis and Determination

NMFS has defined negligible impact as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.*, population-level effects). An estimate of the number of takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be “taken” through harassment, NMFS considers other factors, such as the likely nature of any responses (*e.g.*, intensity, duration), the context of any responses (*e.g.*, critical reproductive time or location, migration), as well as effects on habitat, and the likely effectiveness of the mitigation. We also assess the number, intensity, and context of estimated takes by evaluating this information relative to population status. Consistent with the 1989 preamble for NMFS’s implementing regulations (54 FR 40338; September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into this analysis via their impacts on the environmental baseline (*e.g.*,

as reflected in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality, or ambient noise levels).

To avoid repetition, the discussion of our analyses applies to all the species listed in Table 7, given that the anticipated effects of this activity on these different marine mammal stocks are expected to be similar. There is little information about the nature or severity of the impacts, or the size, status, or structure of any of these species or stocks that would lead to a different analysis for this activity. Pile driving activities have the potential to disturb or displace marine mammals. Specifically, the project activities may result in take, in the form of Level B harassment from underwater sounds generated from pile driving and removal and needle gun use. Potential takes could occur if individuals are present in the ensonified zone when these activities are underway.

Takes by Level B harassment would be in the form of behavioral disturbance and/or TTS. No mortality or PTS (Level A harassment) is anticipated given the nature of the activity and measures designed to minimize the possibility of injury to marine mammals. The potential for harassment is minimized through the construction method and the implementation of the planned mitigation measures (see **Mitigation** section).

The nature of the pile driving project precludes the likelihood of serious injury or mortality. Take would occur within a limited, confined area (north-central Henderson Bay) of the stock's range. Level A and Level B harassment will be reduced to the level of least practicable adverse impact through use of mitigation measures described herein, and as a result, as discussed above, Level A harassment is not anticipated to occur. Further the amount of take authorized is extremely small when compared to stock abundance.

Behavioral responses of marine mammals to pile driving and needle gun use at the project site, if any, are expected to be mild and temporary. Marine mammals within the Level B harassment zone may not show any visual cues they are disturbed by activities (as noted during modification to the Kodiak Ferry Dock (see 80 FR 60636,

October 7, 2015)) or could become alert, avoid the area, leave the area, or display other mild responses that are not observable such as changes in vocalization patterns. Given the short duration of noise-generating activities per day and that pile driving and removal would occur across three months, any harassment would be temporary. There are no other areas or times of known biological importance for any of the affected species.

In addition, it is unlikely that minor noise effects in a small, localized area of habitat would have any effect on the fitness of any individual or the stocks' ability to recover. In combination, we believe that these factors, as well as the available body of evidence from other similar activities, demonstrate that the potential effects of the specified activities will have only minor, short-term effects on individuals. The specified activities are not expected to impact rates of recruitment or survival and will therefore not result in population-level impacts.

In summary and as described above, the following factors primarily support our determination that the impacts resulting from this activity are not expected to adversely affect the species or stock through effects on annual rates of recruitment or survival:

- No mortality or Level A harassment is anticipated or authorized;
- No biologically important areas have been identified within the project area;
- For all species, Henderson Bay is a very small and peripheral part of their range;
- WADOT would implement mitigation measures such as shut downs and slow removal of piles to minimize turbidity and shaking the pile slightly prior to removal (wake up) to break the bond with surrounding sediment to avoid pulling out large blocks of sediment; and
- Monitoring reports from similar work in Puget Sound have documented little to no effect on individuals of the same species impacted by the specified activities.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the monitoring and mitigation measures, NMFS finds that the total marine mammal take from the proposed activity will have a negligible impact on all affected marine mammal species or stocks.

Small Numbers

As noted above, only small numbers of incidental take may be authorized under section 101(a)(5)(D) of the MMPA for specified activities other than military readiness activities. The MMPA does not define small numbers and so, in practice, where estimated numbers are available, NMFS compares the number of individuals taken to the most appropriate estimation of abundance of the relevant species or stock in our determination of whether an authorization is limited to small numbers of marine mammals. When the predicted number of individuals to be taken is fewer than one third of the species or stock abundance, the take is considered to be of small numbers. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

The amount of take NMFS authorizes is below one third of the estimated stock abundance for all stocks. For harbor seals there are no official estimates of the stock size. We do know the populations of harbor seals in Puget Sound are increasing and number at least 32,000 (Jeffries, 2013). We also know that harbor seals do not generally range over large areas (see above). Therefore, it is most likely that the number of harbor seal takes is a small number. For all stocks, these are all likely conservative estimates of percent of stock taken because they assume all takes are of different individual animals which is likely not the case. Some individuals may return multiple times in a day, but PSOs would count them as separate takes if they cannot be individually identified.

Based on the analysis contained herein of the proposed activity (including the mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS finds that small numbers of marine mammals will be taken relative to the population size of the affected species or stocks.

Unmitigable Adverse Impact Analysis and Determination

There are no relevant subsistence uses of the affected marine mammal stocks or species implicated by this action. Therefore, NMFS has determined that the total taking of affected species or stocks would not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

National Environmental Policy Act

To comply with the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq.*) and NOAA Administrative Order (NAO) 216-6A, NMFS must review our proposed action (*i.e.*, the issuance of an IHA) with respect to potential impacts on the human environment.

This action is consistent with categories of activities identified in Categorical Exclusion B4 (IHAs with no anticipated serious injury or mortality) of the Companion Manual for NOAA Administrative Order 216-6A, which do not individually or cumulatively have the potential for significant impacts on the quality of the human environment and for which we have not identified any extraordinary circumstances that would preclude this categorical exclusion. Accordingly, NMFS has determined that the issuance of the IHA qualifies to be categorically excluded from further NEPA review.

Endangered Species Act

Section 7(a)(2) of the ESA (16 U.S.C. 1531 *et seq.*) requires that each Federal agency insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. To ensure ESA

compliance for the issuance of IHAs, NMFS consults internally, in this case with the West Coast Region Protected Resources Division Office, whenever we propose to authorize take for endangered or threatened species.

No incidental take of ESA-listed species is authorized or expected to result from this activity. Therefore, NMFS has determined that formal consultation under section 7 of the ESA is not required for this action.

Authorization

NMFS has issued an IHA to WADOT for the potential harassment of small numbers of six marine mammal species incidental to the Purdy Bridge Rehabilitation project in Pierce, WA, provided the previously mentioned mitigation, monitoring and reporting requirements are followed.

Dated: February 1, 2021.

Donna S. Wieting,

Director, Office of Protected Resources,

National Marine Fisheries Service.

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